

Claims 1, 3, 4, 7, 8, 9 and 15-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,533,136 to Smith. Claims 1, 17, 22 and 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,363,147 (hereinafter Joseph).

Although Applicant believes that each of independent claims 1 and 17 already do distinguish over both Smith and Joseph, each of these claims has been amended to clarify these distinctions and thereby clearly patentably distinguish over Smith and over Joseph. First, each of independent claims 1 and 17 has been amended to clearly recite that the claimed invention is directed to a feedback control system. This is in contrast to Smith which discloses a feed-forward system. Second, each of claims 1 and 17 has been amended to clearly recite that the feedback control signal is based upon a Root-Mean Square value of the second audio signal. As Joseph does not disclose, teach or suggest determining of a Root-Mean Square (RMS) value of any audio signal or the use of such a RMS value in a feedback system, each of claims 1 and 17 is believed to patentably distinguish over Joseph.

1. Claim 1 Patentably Distinguishes over Smith and over Joseph

As now presented, claim 1 is directed to circuit for processing broadcast signals. The circuit comprises first circuitry for receiving a broadcast signal and processing the broadcast signal to extract and output a first audio signal, an attenuator for receiving the first audio signal and attenuating the first audio signal based upon a first control signal to generate a second audio signal, second circuitry for receiving the second audio signal and one of attenuating and amplifying the second audio signal based upon a second control signal to generate a third audio signal, and feedback circuitry for generating the first control signal based upon the second audio signal. The feedback circuitry includes third circuitry for receiving the second audio signal and determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal based upon the RMS value, and a comparator for receiving the output signal and comparing the output signal with at least one reference signal to generate the first control signal.

In contrast to the attenuating circuit of Smith, claim 1 recites that the circuit includes feedback circuitry for generating the first control signal based upon the second audio signal. Nowhere does Smith disclose, teach, or suggest feedback circuitry as recited in claim 1. Indeed, the attenuating circuit of Smith is a feed-forward system in which the output of attenuating circuits 80 is directly provided to output channels 200 and 202. As Smith does not disclose,

teach, or suggest circuitry that includes feedback circuitry as recited in claim 1, claim 1 patentably distinguishes over Smith for at least this reason.

Claim 1 further patentably distinguishes over Smith as claim 1 recites that the feedback circuitry includes third circuitry for receiving the second audio signal and determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal based upon the RMS value, and a comparator for receiving the output signal and comparing the output signal with at least one reference signal to generate the first control signal. Nowhere does Smith disclose, teach, or suggest third circuitry for receiving a second audio signal and determining a Root Mean Square (RMS) value of that second audio signal as recited in claim 1. Because Smith does not disclose, teach, or suggest a circuit for processing broadcast signals that includes all the features recited in claim 1, claim 1 patentably distinguishes over Smith. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. § 102(b) over Smith be withdrawn.

Claim 1 also patentably distinguishes over Joseph. Although Joseph does disclose an audio signal reproducing circuit that includes a voltage controlled amplifier that uses a form of feedback control, the feedback control of Joseph is based upon a peak signal detection. Nowhere does Joseph disclose, teach, or suggest feedback circuitry that includes third circuitry for receiving a second audio signal and determining a Root-Mean Square (RMS) value of that second audio signal as recited in claim 1. Further, as noted in Applicant's prior response dated February 7, 2001, controlling an audio amplifier based upon the peak amplitude of an audio signal results in distortion of the output audio signal. Indeed, the net result of the audio signal reproducing circuit of Joseph would be to compress the signal applied to the audio amplifier 8 in both its volume range and its frequency range. By contrast, embodiments of Applicants' invention provide an input to the integrating comparator 230 which is dependent on the amplitude of the signal at the output terminal 260. By sensing the amplitude as the controlled parameter, it is the actual perceived volume of the output which is controlled. Because Joseph does not disclose, teach, or suggest a circuit for processing broadcast signals that includes third circuitry for determining a RMS value as recited in claim 1, claim 1 patentably distinguishes over Joseph.

Further, claim 1 also recites that that the circuit for processing broadcast signals includes second circuitry for receiving the second audio signal and one of attenuating and amplifying the second audio signal based upon a second control signal to generate a third audio signal.

Nowhere is this aspect of Applicants' invention disclosed, taught, or suggested in Joseph. Indeed, the audio signal reproducing circuit of Joseph discloses no such circuitry for attenuating or amplifying the signal output from the voltage controlled amplifier 10, and clearly no such circuitry that does so based upon a second control signal as recited in claim 1. Accordingly, because Joseph does not disclose, teach, or suggest a circuit for processing broadcast signals that includes all the features recited in claim 1, claim 1 patentably distinguishes over Joseph and it is respectfully requested that the rejection of claim 1 under 35 U.S.C. § 102(b) be withdrawn.

Claims 3-16 depend either directly or indirectly from claim 1 and patentably distinguish over both Smith and Joseph for at least the same reasons.

2. Claim 17 Patentably Distinguishes over Smith and over Joseph

Claim 17 is directed to a method for processing broadcast signals. The method comprises steps of receiving a broadcast signal and processing the broadcast signal to extract and output a first audio signal, attenuating the first audio signal to generate a second audio signal based upon a first feedback control signal, and one of attenuating and amplifying the second audio signal based upon a second control signal to generate a third audio signal. The step of attenuating the first audio signal includes determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal that is based upon the RMS value, and comparing the output signal with at least one reference signal to generate the first feedback control signal.

Although claim 17 is directed to a method for processing broadcast signals, claim 17 patentably distinguishes over Smith and Joseph for reasons similar to those detailed above with respect to claim 1.

For example, in contrast to the attenuating circuit of Smith, claim 17 recites a step of attenuating a first audio signal to generate a second audio signal based upon a first feedback control signal. Nowhere does Smith disclose, teach, or suggest a step of attenuating an audio signal based upon a feedback signal. Indeed, Smith is a feed-forward system. In addition, claim 17 also recites that the step of attenuating the first audio signal includes a step of determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal that is based upon the RMS value. Because Smith does not disclose, teach, or suggest either of these features recited in claim 17, claim 17 patentably distinguishes over Smith. Accordingly, it is respectfully requested that the rejection of claim 17 under 35 U.S.C. § 102(b) over Smith be withdrawn.

Claim 17 also patentably distinguishes over Joseph. Nowhere does Joseph disclose, teach, or suggest a step of attenuating a first audio signal to generate a second audio signal based upon a first feedback control signal that includes a step of determining a Root Mean Square (RMS) value of the second audio signal. Nor does Joseph disclose, teach, or suggest a step of one of attenuating and amplifying a second audio signal based upon a second control signal as recited in claim 17. Indeed, Joseph does not disclose, teach, or suggest either of the above mentioned steps recited in claim 17. Accordingly, because claim 17 patentably distinguishes over Joseph, it is respectfully requested that the rejection of claim 17 under 35 U.S.C. § 102(b) be withdrawn.

Claims 19-21 depend either directly or indirectly from claim 17 and patentably distinguish over both Smith and Joseph for at least the same reasons.

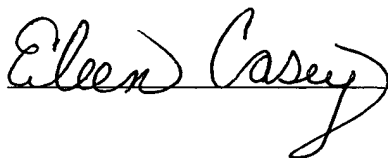
CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to deposit account No. 23/2825.

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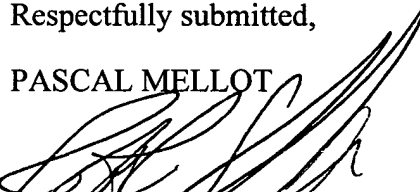
I hereby certify that this document is being placed in the United States mail with first-class postage attached, addressed to the Commissioner for Patents, Washington, D.C. 20231 on November 15, 2001.



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Respectfully submitted,

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AMENDED CLAIMS SHOWING AMENDMENTS

1. (Twice amended) A circuit for processing broadcast signals, comprising:
 - [circuitry for receiving and processing broadcast signals, which signals contain audio information, and providing a first audio signal, and
 - circuitry for controlling the amplitude of a received second audio signal in response to a first control signal, and providing a third audio signal;
 - wherein the circuit for controlling the amplitude further comprises circuitry that receives the first audio signal and provides the second audio signal for automatically limiting the amplitude of the first audio signal in response to at least one reference signal;
 - wherein the circuitry for automatically limiting the amplitude of the first audio signal comprises:
 - circuitry, that receives the second audio signal, for providing an output signal in response to the amplitude of the second signal;
 - circuitry for comparing the output signal and said at least one reference signal and providing a second control signal in response to the output signal and said at least one reference signal; and
 - circuitry, that receives the first audio signal and that is controlled in response to the second control signal, for providing the second audio signal]
 - first circuitry for receiving a broadcast signal and processing the broadcast signal to extract and output a first audio signal;
 - an attenuator for receiving the first audio signal and attenuating the first audio signal based upon a first control signal to generate a second audio signal;
 - second circuitry for receiving the second audio signal and one of attenuating and amplifying the second audio signal based upon a second control signal to generate a third audio signal; and
 - feedback circuitry for generating the first control signal based upon the second audio signal, the feedback circuitry including
 - third circuitry for receiving the second audio signal and determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal based upon the RMS value, and
 - a comparator for receiving the output signal and comparing the output signal with at least one reference signal to generate the first control signal.

3. (Twice amended) A circuit according to claim 1, wherein the [circuitry for providing the output signal; the circuitry for providing the second control signal; and the circuitry for providing the second audio signal] attenuator, the comparator, and the third circuitry are implemented by analog and/or digital circuitry.

4. (Twice amended) A circuit according to claim 1, wherein the [circuitry for providing: the output signal; the second control signal; and for providing the second audio signal] attenuator, the comparator, and the third circuitry are implemented by hardware digital circuitry.

5. (Twice amended) [A circuit] according to claim 3, wherein the digital circuitry [can be] is represented by one or more digital signal processing algorithms and/or by one or more software routines.

7. (Twice amended) A circuit according to claim 1, wherein the third circuitry [for providing the output signal] is a Root-Mean Square extractor circuitry[; the circuitry for providing the second control signal] and the comparator is an integrating comparator[; and the circuitry for providing the second audio signal is an attenuator].

9. (Twice amended) A circuit according to claim 7, wherein the [circuitry for providing the second control signal comprises] integrating comparator includes a current sourcing/sinking comparator [connected between its output terminal and a reference voltage].

10. (Amended) A circuit according to claim 7, wherein the [circuitry for providing the second audio signal is] attenuator includes a multiplying digital-to-analog converter.

11. (Twice amended) A circuit according to claim 1, further comprising [circuitry and/or] an apparatus that receives television signals.

13. (Twice amended) A circuit according to claim 1, further comprising [circuitry and/or] an apparatus that receives satellite signals.

15. (Twice amended) A circuit according to claim 1, further comprising [circuitry and/or] an apparatus that receives radio signals.

17. (Twice amended) A method for processing broadcast signals [that comprises] comprising the steps of:

[receiving and processing broadcast signals, which signals contain audio information, and providing a first audio signal; and

controlling the amplitude of a received second audio signal in response to a first control signal and providing a third audio signal; and

automatically limiting the amplitude of the first audio signal in response to at least one reference signal and providing a second audio signal;

wherein the step of automatically limiting the amplitude of the first audio signal comprises:

providing an output signal in response to the amplitude of the second signal;

comparing the output signal and said at least one reference signal and providing a second control signal in response to the output signal and said at least one reference signal; and

receiving the first audio signal and controlling said first audio signal in response to the second control signal, for providing the second audio signal]

receiving a broadcast signal and processing the broadcast signal to extract and output a first audio signal;

attenuating the first audio signal to generate a second audio signal based upon a first feedback control signal; and

one of attenuating and amplifying the second audio signal based upon a second control signal to generate a third audio signal;

wherein the step of attenuating the first audio signal includes

determining a Root Mean Square (RMS) value of the second audio signal and providing an output signal that is based upon the RMS value, and

comparing the output signal with at least one reference signal to generate the first feedback control signal.

19. (Amended) A method according to claim 17, wherein [it] the method is implemented in [circuitry and/or] an apparatus that receives television signals.

20. (Amended) A method according to claim 17, wherein [it] the method is implemented in [circuitry and/or] an apparatus that receives satellite signals.

21. (Amended) A method according to claim 17, wherein [it] the method is implemented in [circuitry and/or] an apparatus that receives radio signals.